AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A device for thermal overload protection of an electrical device, particularly an electric motor ~~(M)~~, the device comprising

a current meter configured to measure ~~means for measuring~~ at least one load current supplied to the electrical device ~~(M),~~;

a processor system configured to calculate ~~means for calculating the~~ a thermal load on the electrical device on the basis of said at least one load current, and

a switch device ~~means (S2) for~~ disconnecting a current supply ~~(L1, L2, L3)~~ when the thermal load reaches a given threshold level, ~~wherein~~

said ~~means for calculating the thermal load on the electrical device comprise a~~ processor system employing 32-bit ~~X-bit, preferably X=32,~~ fixed-point arithmetic and being configure to~~, the system comprising means for scaling~~ scale the measured current into unit values to a range of 0 to Y, wherein Y represents Y/100% of a nominal current and is a real number greater than 0, and ~~means for~~ to calculate ~~calculating~~ the thermal load using a mathematical equation that, together with its operands, is programmed into the microprocessor system structured such that a result or a provisional result never exceeds the ~~X-bit~~ 32-bit value.

2. (Currently Amended) A device as claimed in claim 1, wherein the mathematical equation is

$$\Theta_k = \Delta T * \frac{i^2}{C} + \left(1 - \frac{\Delta T}{R * C}\right) * \Theta_{k-1}$$

wherein

$\Theta_{\underline{k}}$ = <ins>currently calculated</ins> thermal load

<ins>Θ_{k-1}= previous thermal load</ins>

ΔT = interval for thermal load calculation

R = cooling factor of electrical device

C = trip-class factor

<ins>i = measured current</ins>.

3. (Previously Presented) A device as claimed in claim 2, wherein one or more of following operand values are used

Θ = 0 to 200% preferably corresponding to a value range of 0 to 2.4

ΔT = interval for thermal load calculation in milliseconds

R = cooling factor of electrical device in a range of 1 to 10

C = trip-class factor

i = measured current.

4. (Cancelled)

5. (Cancelled)

6. (Currently Amended) A device as claimed in claim 3, wherein C is trip-class factor t_6 multiplied by a constant, preferably 29.5, or calculated by the formula (1/k) * Te * (Ia/In)^2, wherein <ins>t_6=trip-class factor,</ins> Ia = starting current, In = nominal current, Te = allowed starting time and k = constant, preferably k = 1.22.

7. (Currently Amended) A method for thermal overload protection of an electrical device, particularly an electric motor, ~~the method~~ comprising

measuring at least one load current supplied to the electrical device,

~~calculating the thermal load on the electrical device on the basis of said at least one load current, and~~

~~interrupting current supply to the electrical device when the thermal load reaches a given threshold level, comprising~~

scaling the measured current into a unit value to a range of 0 to Y, wherein Y

represents Y/100% of a nominal current and is a real number greater than 0,

calculating the thermal load on the electrical device on the basis of said at least one load current using ~~an X-bit, preferably X=32,~~ a 32-bit processor system employing fixed-point arithmetic, wherein a mathematical equation for thermal load is programmed structured such that a result or a provisional result never exceeds the ~~X-bit~~ 32-bit value, and

interrupting current supply to the electrical device when the thermal load reaches a given threshold level

8. (Currently Amended) A method as claimed in claim 7, comprising the mathematical equation being

$$\Theta_k = \Delta T * \frac{i^2}{C} + \left(1 - \frac{\Delta T}{R * C}\right) * \Theta_{k-1}$$

wherein

Θ_k = currently calculated thermal load, preferably 0 to 200% preferably corresponding to a value range of 0 to 2.4

Θ_{k-1}= previous thermal load

ΔT = interval for thermal load calculation, preferably in milliseconds

R = cooling factor of electrical device, preferably 1 to 10

C = trip-class factor

i = measured current.

9. (Cancelled)

10. (Cancelled)

11. (Currently Amended) A method as claimed in claim 8, comprising C being trip-class factor t_6 multiplied by a constant, preferably 29.5, or calculated by the formula (1/k) * Te * $(Ia/In)^2$, wherein t_6=trip-class factor, Ia = starting current, In = nominal current, Te = allowed starting time and k = constant, preferably k = 1.22.

12. (Cancelled)

13. (Cancelled)

14. (Currently Amended) A device as claimed in claim 4, wherein C is trip-class factor t_6 multiplied by a constant, preferably 29.5, or calculated by the formula (1/k) * Te * $(Ia/In)^2$, wherein t_6=trip-class factor, Ia = starting current, In = nominal current, Te = allowed starting time and k = constant, preferably k = 1.22.

15. (Currently Amended) A device as claimed in claim 5, wherein C is trip-class factor t_6 multiplied by a constant, preferably 29.5, or calculated by the formula (1/k) * Te * $(Ia/In)^2$, wherein t_6=trip-class factor, Ia = starting current, In = nominal current, Te = allowed starting time and k = constant, preferably k = 1.22.

16. (Cancelled)

17. (Currently Amended) A method as claimed in claim 9, comprising C being trip-class factor t_6 multiplied by a constant, preferably 29.5, or calculated by the formula (1/k) * Te * $(Ia/In)^2$, wherein t_6=trip-class factor, Ia = starting current, In = nominal current, Te = allowed starting time and k = constant, preferably k = 1.22.

18. (Currently Amended) A method as claimed in claim 10, comprising C being trip-class factor t_6 multiplied by a constant, preferably 29.5, or calculated by the formula (1/k) * Te * $(Ia/In)^2$, wherein t_6=trip-class factor, Ia = starting current, In = nominal current, Te = allowed starting time and k = constant, preferably k = 1.22.

19. (New) An apparatus comprising a processor and a memory storing executable instructions that perform:

measuring at least one load current supplied to an electrical device, particularly an electric motor,

scaling the measured current into a unit value to a range of 0 to Y, wherein Y represents Y/100% of a nominal current and is a real number greater than 0,

calculating a thermal load on the electrical device on the basis of said at least one load current using a 32-bit processor system employing fixed-point arithmetic and a programmed mathematical equation structured such that a result or a provisional result never exceeds the 32-bit value, and

interrupting current supply to the electrical device when the thermal load reaches a given threshold level, in order to protect the electrical device against thermal overload.